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3 August 1979

Worldwide Report

ENVIRONMENTAL QUALITY

(FOUO 7/79)

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CONTENTS PAGE

CONTENTS (Continued) Page

JAPAN

ENVIRONMENT AGFNCY 'PROTECTED POLLUTION'

Tokyo THE DAILY YOMIURI in English 16 Jun 79 p 2

[Text] ***The Environment Agency, whose job is supposed to be protection of the environment, interfered with a legislative effort by the Shiga-ken Government to protect Lake Biwa from pollution by synthetic detergents discharged into its waters, it was learned Thursday.***

When Shiga-ken Governor Masayoshi Takemura and the prefectural government were compiling a bill to restrict selling of synthetic detergents in Shiga-ken to be submitted to the prefectural assembly, the Environment Agency advised the government "to use the utmost discretion" in taking this action.

The Environment Agency said that the Science and Technology Agency had concluded that synthetic detergents were no health hazard if used according to the manufacturers' instructions.

It also said that the freedom of business might be violated if restrictions on selling of synthetic detergents were enforced.

Prefectural government officials in charge of environmental protection were shocked by the Environment Agency's meddling.

According to experts, contamination of lake waters is caused by such nutritious salts as nitrogen and phosphate contained in factory emissions and household emissions.

Progress is being made in preventing lake water pollution by factory emissions thanks to efforts by both the central and local governments.

But household emissions into lake waters are under almost no curbs.

In particular, phosphate contained in synthetic detergents is an arch contaminant, and is the main cause of a "red tide."

Contamination of Lake Biwa is getting worse every year.

The transparency of its water as of March 31, 1979, was 1.7 meters in the south and 4.2 meters in the north, compared with 2.1 meters and 4.6 meters, respectively, a year earlier.

About 10 cases of red tide occur every year, and carp and rainbow trout are damaged.

The Shiga-ken Government and Shiga-ken residents, are working out a bill to prevent further contamination of the lake.

This is the first instance of a bill being compiled through joint efforts by a prefectural government and campaigners for a clean environment; but opposition came from the Environment Agency.

CSO: 5000

JAPAN

MITI STRONGLY OPPOSING ENVIRONMENT AGENCY CONTROLS ON NOX

Tokyo MAINICHI DAILY NEWS in English 16 Jul 79 p 12

[Text]

The Environment Agency is having a hard time introducing "comprehensive" air pollution controls over nitrogen dioxide (NOx) due to strong opposition by the International Trade and Industry Ministry.

The agency planned to start the NOx-combating measure by designating regions where specified reductions of NOx emissions had to be carried out by last March.

The agency's action was prompted by public criticism of its drastic relaxation of the NOx control standards just a year ago.

The nitrogen dioxide control requirement was set at less than 0.02 ppm on a daily average in May 1973.

Business circles claimed the standard was too strict and pressured the agency into easing it sharply to less than 0.04-0.06 ppm in July last year.

Naturally, environmentalists and pollution victims criticized the broad relaxation of the anti-pollution standard as a sheer retreat on the part of the environmental authorities and started litigation.

In addition to the battle at the Tokyo District Court on the case, protests and petitions have continued unquenched in the past year.

Driven into a tight corner, the Environmental Agency has pledged to strengthen NOx controls, though the restriction levels were lowered.

But, the International Trade and Industry Ministry is strongly opposed to the agency's plan claiming it has no technical basis and is therefore pointless.

MITI is apparently backed by industrial circles which fear stricter controls on NOx discharges from their factories.

They doubt whether it is really possible to restrict the traffic of large vehicles which play a large role in the people's livelihoods.

Sharp confrontation between the agency and MITI is likely to continue for some time over the proposed comprehensive measures against nitrogen dioxide which are necessarily connected with energy problems.

Similar action against sulfuric oxide (SOx) was taken in 1974, and is taking favorable effects.

CSO: 5000

JAPAN

EFFLUENT RESTRICTIONS LAW FOR TOKYO BAY, INLAND SEA

Tokyo THE JAPAN TIMES in English 12 Jun 79 p 2

[Text]

The government's restrictive measures designed to hold down total amounts of waste effluents discharged into lakes, bays and inland waterways will become law today at three locations — Tokyo Bay, Ise Bay and the Inland Sea.

Subject to the restrictions are some 10,000 industrial plants and other establishments which discharge more than 50 tons of waste water daily.

But, the restrictions will not actually be enforced until June 1980 for existing industries and until June 1981 for plants to be located near the three areas in the future.

Under a relevant law, those establishments will be required to measure and keep records of the amounts of waste discharge.

A goal will be set to clean the waters before 1984.

Total amounts of wastes allowable in these waters are yet to be set due to a delay in drawing up guidelines by the Environment Agency.

Under these guidelines the prefectural authorities concerned will set specific figures for each waste discharging establishment in terms of chemical oxygen demands (COD).

CSO: 5000

JAPAN

WATER SHORTAGE FORCES CURTAILMENT OF SUPPLY IN TOKYO

Reservoirs Near 90 Million Tons

Tokyo MAINICHI DAILY NEWS in English 11 Jul 79 p 12

[Text]

The reduction in water intake from the six reservoirs in the upper reaches of the Tone River in Gumma Prefecture is likely to be tightened to 20 percent for the metropolitan area early next week because water stored in the reservoirs fell to less than half of capacity as of Tuesday.

The 10 percent reduction in water intake started Monday for Tokyo and five other prefectures in the Kanto region to cope with the sharp drop in water stored in the six dams due to the abnormally dry rainy season.

Water supply to households and business facilities has been reduced since Monday by an average 10 percent for Tokyo.

The Construction Ministry's Kanto Regional Construction Bureau said water stored in the six dams of the Tone River totaled 128.83 million tons, only 49.7 percent of capacity, as of 6 a.m. Tuesday. This is 5.66 million tons less than at the same date last year and the first time since 1972 that stored volume dropped to less than half of capacity in the month of July.

A liaison council on the water shortage, consisting of the regional construction bureau and the six prefectural governments, met Tuesday afternoon to discuss future measures.

The 20 percent reduction in water intake is expected to be applied when water in the dams drops to less than 90 million tons. Without rain, this is expected to happen by Monday, the regional construction bureau said.

Last year, the metropolitan area suffered a water shortage in August.

Effect on Water Users

Tokyo ASAHI EVENING NEWS in English 11 Jul 79 p 3

[Text]

Further rationing on the supply of tap water to Tokyo, Chiba and Saitama prefectures is likely to be put into effect on Monday. Nearly 750,000 homes are expected to be affected by the cutbacks.

The Construction Ministry and Tokyo and four other prefectures that use the Tone River as their water source decided on Tuesday that a 20-percent cut in the volume of water to be taken from six reservoirs along the river would have to be enforced from 3 p.m. on Monday unless there is a lot of rain this week. The percentage is twice as much as that for the current control measure.

To cope with this, the Tokyo Government plans to enforce an additional five-percent cutback on top of the present 10-percent cut in the supply of city water to its people on Monday. The supply control will be made by lowering pressure in water mains for a total of 13 hours a day, five hours longer than now.

Under the plan, the control on water supply will be put into force daily from 11 a.m. through 5 p.m. and 11 p.m. through 6 a.m. the next morning. The present 10-percent supply cut excludes lunch hours when demand for water is high.

During these hours, some 590,000 houses located near the ends of water pipes are expected to be adversely affected.

The Metropolitan Government also plans to order universities and individuals that own swimming pools not to use them and request primary, junior and senior high schools to take measures to reduce the consumption of water for their swimming pools.

Among other measures to be taken by the Metropolitan Government are tightening of valves for supplying water to factories, hotels and other big consumers and reinforcement of patrols at gas stations to check for any wasteful use of water.

In Saitama Prefecture, the local government is to reduce the water supply to 31 cities and towns under its jurisdiction by 34 percent from Monday. The houses that are likely to be affected under this measure exceed the 50,000 mark.

In Chiba Prefecture, a 20-percent supply cut the local government plans to enforce from Monday is likely to affect more than 100,000 homes located in such cities as Matsudo, Ichikawa, Funabashi and Chiba and in the hilly area in Urayasu Town.

The water supply to the swimming pools at all the schools in this prefecture will be stopped.

CSO: 5000

JAPAN

POLLUTION IN LAKE BIWA MUCH WORSE THAN EXPECTED

Tokyo MAINICHI DAILY NEWS in English 3 Jul 79 p 12

[Text]

The pollution of Lake Biwa is worse in the southern part than in the north, photographs have indicated.

Katsutoshi Ito of Kawanishi City, Hyogo Prefecture and Eileen Miyoko Smith of Kyoto City have been diving and taking photos in Japan's largest lake since last October.

They said the transparency of the water was six meters in the north and only 0.8 meter in the south. The conditions were found to be worse near the bottom. At a depth of 10 meters, the visibility was 1.5 meters in the north and less than 10 centimeters in the south.

The photographers said that the pollution was much worse than they had expected. A particular species of shell called Chikubukawanina, formerly found all over the lake bed, can now be found only in the northern part.

The Citizens' Association to Protect the Environment of Shiga Prefecture and Lake Biwa will hold an exhibition of their photographs at the Otsu Shimin Gallery for three days beginning Aug. 7.

CSO: 5000

JAPAN

PHOSPHOR DISCHARGE INTO INLAND SEA MUST BE CUT

Tokyo MAINICHI DAILY NEWS in English 15 Jul 79 p 12

[Text]

Senichiro Uemura, director general of the Environment Agency, Friday instructed the governors of 13 prefectures bordering the Inland Sea to work out guidelines to hold down phosphor discharges.

The instructions were issued under the special arrangement law for the Inland Sea environment protection which became effective on June 12 this year.

The law empowers the agency director general to have local governments concerned set targets for reducing water pollution by phosphor and its compounds and preventing eutrophication, the cause of red tide.

Under the instructions, prefectural governments of Osaka and Hyogo were requested to try to cut back phosphor discharges from the present level.

The prefectural governments of Wakayama, Tokushima and Oita were urged to try to prevent the density of the water pollutant from rising further, while the rest were required to keep it at the present level.

At present, Osaka and Hyogo each discharge 14 tons of phosphor into the Seto Inland Sea daily—the largest contribution to the pollution of the seawater.

Uemura hopes to contain the daily phosphor disposal within the present 81.1 tons for fiscal 1979 through the arrangement.

It has been estimated that the daily discharge, if uncontrolled, would increase to some 90 tons this year in view of the rise in population and other factors, according to the agency.

As concrete steps to keep phosphor out of the water, the agency proposed the improvement of sewer systems, optimum use of synthetic detergents and introduction of high quality water treatment equipment at new industrial facilities.

CSO: 5000

INTER-AFRICAN AFFAIRS

NEED FOR AID TO SAHEL DISCUSSED

Paris JEUNE AFRIQUE in French 23 May 79 p 11

[Editorial by Aly Cisse, executive secretary of the Permanent Interstate Committee for Drought Prevention in the Sahel (CILSS)]

[Text] Complete and detailed reports of the 1978-1979 agricultural season in the Sahel countries, which were eventually sent to all those who customarily assist when disaster occurs, provide useful information on the results of that season and the causes of the shortages recorded.

Those causes are known. Harvests were bad in some regions:

either because of an attack by grasshoppers and other predators,

or because of quantitative and qualitative lack of seeds. The cumulative effect of several years of drought not having allowed reconstitution everywhere of the main seed-bearers, despite the efforts deployed,

or because of the inadequacy and bad distribution of rainfall. To the damages caused by the feebleness of the desired rains, have come to be added those caused by out-of-season downpours, undesired precipitation. Nature's genuine relentlessness against economies already so sorely tried!

In Cape Verde the situation is catastrophic. The rainy season did not begin until August and lasted only an average of seven weeks. The harvests yielded almost nothing in that country that more than all the others, for ten years has suffered the dramatic effects of the drought.

In all the member states of the CILSS efforts are being deployed to increase food production, especially cereal production. Purchase prices to the producers for cereals have been appreciably raised. Operations are in progress to market the maximum of cereals in areas where there is a surplus, in order to revitalize regions where there is a shortage. What might have been reserves are being used for the stricken populations. Within the limit of available means--alas, very limited!--cereals have been imported or are in the process of being imported. The populations themselves are further organizing

themselves. Cereal banks are being created. It is necessary, however, to recognize that all of these measures will only partially solve the problems.

To fulfill food needs, an appeal went out in Nouakchott on 14 and 15 December 1978. It requested the international community to furnish aid in the form of 350,000 tons of cereals as emergency help and 250,000 tons to rebuild safety stocks. These figures refer to the eight countries belonging to the CILSS, that is, a population of nearly 30,000,000.

Since the Nouakchott appeal the data have increased. Until now, the international community has responded very poorly to the requests. In Cape Verde, where the authorities sent up a new cry of alarm, demanding 66,500 tons of cereals, only 16,000 tons have been granted.

The Sahelians are very worried. The period between harvests is in danger of being a dramatic one. Famine already threatens tens of thousands of persons.

Well, the international community can find no better opportunity to prove its solidarity than by granting aid to the hard-working rural populations who have put so much effort into producing the basics of their subsistence themselves, but who, because of imponderables, have seen their attempts brought--partially or totally--to nothing.

Our friends who are following and supporting our efforts know with what passion and spirit of sacrifice we are continuing our struggle to arrive at nutritional self-sufficiency, our main objective. To be convinced of this, it is enough to travel through our fields during the period of agricultural work. But the caprices of nature must be reckoned with.

In the Sahel we are not in the habit of saying that all goes well when the reality is otherwise. So we are saying that, again this year, we are having difficulties. To solve them, we are obviously first of all depending on ourselves. But it would be criminal to conceal the fact that our own efforts are inadequate and that we need the support of the international community to provide minimally for the populations that have suffered disaster.

To say this is not to beg, it is not adopt an easy solution, it is to demand the right to solidarity, a right that exists for all those who, like the Sahelians, are waging a hard battle that will enable them to free themselves from food dependency--the most painful of dependencies--, but who are seeing their efforts destroyed by elements of which they are not in control.

There is still time to act. And it must be done at once. The rainy season is approaching, and with it the critical period between harvests.

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CSO: 5000

MOZAMBIQUE

BRIEFS

NATURAL RESOURCES CONSERVATION COURSE--Thirty future "conservators of nature," recruited from various provinces of Mozambique began in May a training course in the Gorongosa National Park within the framework of a national program for the protection of the fauna and flora. This course, the third one of this type since 1977, is aimed at fighting erosion and ecological imbalance in all the centers of the country with renewable natural resources, and follows the directives issued by the Third Congress of the FRELIMO [Mozambique Liberation Front]. Sixty conservators trained during 1977 and 1978 are now working for the provincial directorates of agriculture in national parks and reservations. [Excerpts] [Paris MARCHES TROPICAUX ET MEDITERRANEENS in French 8 Jun 79 p 1565]

CSO: 5000

USSR

RATIONAL USE OF UZBEKISTAN NATURAL RESOURCES EXPLORED

Tashkent OBSHCHESTVENNYYE NAUKI V UZBEKISTANE in Russian No 1/1979 pp 12-18

[Article by E. L. Zolotarev and V. I. Sokovnin: "The Problem of Rational Utilization and Protection of the Natural Resources of Uzbekistan"]

[Text] The current status of and the forecast pertaining to the scientific development of the republic's productive forces are evidence of the fact that scientific-technical progress is leading to an ever more intensive and extensive exploitation of the natural wealth. In Uzbekistan alone the volume of extraction and processing of natural materials comprises 1.5 billion tons. The economic turnover encompasses all the new natural resources and territories (the lower-grade ores and the difficult--from a development standpoint--lands of the deserts, the mountains, the foothills, etc.).

The process of depletion of the natural wealth is accompanied by a perceptible pollution of the environment. This is primarily true of the air and water basins. The construction of high-powered thermal electric power stations and the sharp increase in transport facilities are generating an ever greater contamination of the atmosphere with noxious compounds--nitric and sulfuric oxides and hydrocarbons, many of them of a carcinogenous character. Despite the construction and operation of modern purification installations, the surface and underground waters continue to be inundated by a considerable quantity of drainage water which contains not only industrial wastes but also erosion output from the agricultural fields--dissolved toxic chemicals and fertilizers.

With the growth of the population and the escalation of its living standard has come an increase in the amounts of household wastes, particularly in the cities. The threat of environmental pollution has also increased sharply as a result of the expansion of the area of the mining pits, terraces and fields, the formation of an enormous quantity of debris, etc. All this is moving the problem of rational exploitation of natural wealth and environmental protection to the forefront of the most important problems. As a result, an ever more substantial proportion of the material resources is

involved in the environmental protection program and this determines the need for effective utilization of these resources.

The building of a material and technical base for communism is tied in primarily with the problem of the effectiveness and quality of the exploitation of the various economic potentialities and resources. In the area of physical production this problem entails careful and efficient use of the various natural resources--primarily raw materials, fuel, land and water--and the protection and reproduction of the biological and other natural components. Thus, the problem of effectiveness and quality in relation to the utilization of raw materials of nature is manifested in the organization of a system of rational exploitation of the natural resources in the various regions of the country.

As L. I. Brezhnev remarked at the 25th Party Congress, "the country's need for energy and raw material is growing continuously and the cost of producing these is becoming ever greater. Consequently, to avoid an inordinate increase in capital investments, we must achieve a more rational utilization of the resources; this includes reduction of the expenditure of materials in production, and the use of less expensive and more effective materials as well as economical expenditure of these materials."

Arising in consequence of this is the urgent need to compile a comprehensive plan for the development of the productive forces and exploitation of the natural resources, a plan which will operate in conjunction with the measures for environmental protection. The plan must provide for the requisite administrative mechanism, one based on an economic evaluation of the natural resources, their listing on the production balance sheet, the fixing of charges for the use of the natural resources, cost accounting, measures for economic incentive, and conservation measures in combination with strict and inescapable responsibility for any violation of the established norms for the use of natural resources.

Recent years have confirmed the belief that the protection and reproduction of natural wealth do not connote some self-sufficient system of measures which is supposed to "screen" production from nature or at any rate wholly eliminate the "harmful" influences of the economy on nature. Now the realm of protection and reproduction of natural resources is to an ever greater extent fusing with the realm of production of material goods and is becoming a component organic part of it.

The 25th CPSU Congress focused special attention on the problem of forming the sphere of protection and reproduction of the natural resources into an independent national economic sector. At present the measures for protection of the natural resources are planned on the same level as the other national economic indicators; in the 10th Five-Year Plan alone 111 billion rubles were allocated for this purpose and for the country as a whole the overall expenditures for environmental protection, including those for the prevention of noxious discharges, will reach 30-35 billion rubles. To maximize the

effect obtained from these enormous expenditures it is necessary to arrive at a clear-cut determination of the conservation measures needed by any particular region and what economic discharges pose the greatest threat to its well-being. In this connection there is a constant need for the development of methods of evaluating the potential consequences stemming from the discharges of contaminating production projects as they affect the environment; also, methods of forecasting the total quantity of these discharges in the near and distant future and preparing a strategy of regional planning of conservation measures encompassing also a determination of their economic effectiveness and priorities.

The work along these lines is particularly urgent for many of the territorial production complexes of Uzbekistan such as the Angren-Almalykskiy, Nizhneamudar'inskiy, Ferganskiy and others, i.e. the regions which are characterized by the most intensive development of productive forces and by the greatest impact on the environment both at present and in the future. Any one of these regions is characterized by its own peculiar problems in relation to the exploitation of its natural wealth. Where the most serious problem the Fergana valley has to cope with is the problem of prevention of pollution of the hydrosphere and biosphere by toxic chemicals and fertilizers as a result of their intensive use in the agriculture of this densely populated agrarian territory and whereas the Angren-Almalyk mining and industrial region is faced with the extremely urgent task of preventing pollution of the environment by discharges from the industrial enterprises of the Angren complex, the Angren Gres and others, for the lower part of the Amu-Dar'ya the top-priority importance is assigned to the economic and social consequences of the drying of the Aral Sea.

Studies of this kind are now being made by the SOPS [Council for the Study of Productive Resources] of the AN [Academy of Sciences], UzSSR in collaboration with other republic and All-Union scientific research organizations.

Rational exploitation of raw materials and protection of the environment from pollution constitute primarily a regional problem, one that can only be resolved by a complex, territorially complete approach to the installations under study as one would approach the individual production sectors or the basic natural media--the atmosphere, the hydrosphere and the biosphere.

It is also necessary to keep in mind not only that in Uzbekistan or any of its parts (for example, the Fergana valley) the circumstances of exploitation of the natural resources and protection of the environment will be completely different from, let us say, the Baltic region. Stemming from this is a different set of instruments and a different approach to solution of the problems at hand. This has reference chiefly to the fact that the currently widely disseminated analysis of the economy's impact on the environment is proceeding on a sector orientation basis--via the impact of a particular sector on the environment (usually only on its individual components). This kind of approach, we feel, is permissible and desirable only in the initial stage of the research when it is necessary to determine

how the environment is affected by a specific construction project, as for example the effect of a thermal electric power station on the quality of the adjacent atmosphere.

In the next stage there arises the need to analyze the effect of this production on the entire natural complex of the region under study, i.e. on the soil, the water, the atmosphere, the vegetation, etc. And the final stage calls for an evaluation of the impact of this territory's production complex as a whole on its entire natural complex. In other words, a thorough analysis must be made of the whole process of interaction of the economy and nature in a clearly defined, limited area of a particular territorial production complex.

Of course, such an analysis must take into account the peripheral impact of specific territorial production complexes (TPK). Thus, a high-powered TETs located scores of kilometers distant from the TPK will make a fairly substantial contribution to its pollutants, perhaps even more than a station not as large situated within this region. Also to be considered are the "answering" pollutants travelling from "our" TPK to other regions.

In actuality, the impact of economic factors on the environment is by no means always limited to specific territories. It usually extends far beyond the bounds of these territories; the effect is manifested at times not directly and not identically and with a greater or lesser time interval. Take, for example, the lower reaches of the Amu Dar'ya. This region is the natural recipient of all the contaminating substances washed up by the Amu Dar'ya waters from the subsidiary territories beginning with Afghanistan, Tadzhikistan, Turkmenia and the Karshinskiy Steppe and ending with Khorezm, Tashauz and Karakalpakia.

Thus, the total quantity and concentration of the pollutants in a given territory should logically be determined by the balance method--the amount sought will be obtained by calculating the accumulation of pollutants from one's own sources, adding those coming into the region through natural circulation (via the atmosphere, water, etc.) from adjacent regions, and subtracting attrition resulting from this circulation out of the territory.

Because of the complexity entailed in the solution of these problems, we believe that the task and the methodological preconditions should encompass a calculation of the discharges and their effect only within the TPK under study. The other peripheral pollutants can at any particular stage be listed outside the scope of this investigation particularly since the quantity and quality of them can by arrangement be equated with the same discharges from the TPK under study to the surrounding regions and thus in effect be reciprocally neutralized.

Thus, as is true of any other model, the model of the TPK under study, with the attendant industries, enterprises and environmental components and their interrelationships and interactions, must be simplified within

reasonable limits. However, this does not under any circumstance mean that the forecast pertaining to this TPK should have a low level of reliability. The greatest possible consideration should be given to all the directions and factors encompassed in the already existing system for monitoring the environment.

The development of the essential principles underlying the methods and the system of indicators pertaining to the comprehensive territorial and sectorial investigations of the use of the natural resources and the environmental pollution must undoubtedly be contingent upon the regional and economic preconditions, i.e. the ultimate aim of this investigation is a determination and corroboration of the normative (relative) and maximum permissible indicators of the economic impacts on the environment and an economic evaluation of these impacts. In other words, it is necessary to determine the nature and quantity of the pollutants a particular enterprise discharges into the environment of the relevant TPK.

We are here dealing not so much with regional as with sectorial studies. There are no special difficulties involved and the necessary preconditions exist for the conduct of regional comprehensive studies. It is also necessary to determine what purification installations and what technology this enterprise has for the prevention of environment pollution, what volume of capital investments it is making available for this purpose, and what effectiveness these investments are achieving.

After we determine the discharges pertaining to all the sectors of the TPK under study and after we have carefully observed the natural, social and economic effects resulting from their operation, we have made it possible to evaluate the impact of the entire aggregate of pollutants acting on the environment of the territory under study. This will not simply be an arithmetical computation of the various pollutants emitted into a particular TPK by various industries but a far more thorough regional analysis of the possible dispersion of the various pollutants and their accumulation beginning from the source of the pollution and proceeding to the nearest area (such dispersion is conventionally referred to as the "point distribution" nature of the pollution).

Of course, the further away the pollutant is from the source, the lesser will be its concentration but, on the other hand, new pollutants may be added from other sources. From each enterprise's point distribution pollution we can proceed to an analysis of the area, i.e. local pollution by obtaining a total for all the enterprises with a small local territory (industrial center). A simple summation of the pollutants of this type with respect to a particular industrial center will make it possible to determine the degree of potential threat of pollution of the local sector and its natural medium. Depending on the dispersion of these pollutants to a more widespread territory, the degree of aeration of the locality, and the medium's capacity for self-purification, this potential hazard can be lessened to some degree.

To determine the extent of the pollution of the environment of a particular TPK, it is desirable, we believe, to compute the relative indicators of pollution per unit of area, unit of output produced, and unit of volume of the polluted natural resources (the air of the lower part of the atmosphere--the troposphere, the water, etc.) on three levels: in the region of the point distribution pollution--the area of most active operation of the polluting enterprise; in the region of area or local pollution in the territory of the industrial center; and, finally, for the entire area of the TPK.

In the model of TPK pollution we examined the zone of active point distribution pollution is conventionally defined as a radius of 5 km, area or local pollution as a 10-15 km radius, and regional pollution as taking in the entire area of the TPK. Moreover, it is believed (also, by convention) that the process of pollution of the air, water, soil, etc. takes place on the whole uniformly. Computing the relative indicators for this area does not, in our opinion, entail any special labor. These indicators obviously enable us to say with a fair degree of accuracy whether or not the levels of maximum permissible concentrations of pollutants in a particular TPK territory have risen or fallen, how great a potential hazard this pollution presents in light of emission of polluting substances throughout the region, and, finally, what is the total "pollution load" for the environments (and the ecological system in particular) of the TPK under study.

In the process of computing the extent of pollution of the TPK it is very important to determine the proportion of the total environmental pollution to which each specific industry or large enterprise is subjected. Such an analysis enables us to determine the degree or class of hazard for each industry from the discharges.

By deriving these figures as well as the relative indicators we can, we believe, compare the various regions in respect to the degree of pollution and we can thus say what degree of pollution we can anticipate in the long-term future. At the same time, it will be possible in the future to estimate what expenditures are needed to reduce the pollution of the TPK and bring it to the norm, i.e. make it possible to compute the economic normative indicators. The final result of this kind of determination of the relationship between the industries and their "class" of pollution potential (of course, with due consideration for the relevant technological schemes) will be the development of methods of predicting the optimum structure of the sectors of the economy on the TPK territory, with allowance for their maximum permissible ecological loads acting on the environment. As N. P. Fedorenko notes, this will help to substantiate these requirements for the development of production, for scientific-technical progress, and for the supply of resources for the conservation measures which "will enable us to attain the normative status of the natural environment along with a program coordinating these measures with the other final goals of the social and economic development in the period covered by the forecast."

In a situation of this kind isolated (even if very effective) measures within the framework of the exploitation of the natural resources by the various industries cannot now provide for complete protection of the republic's environment. It has therefore become necessary to devise an optimum republic system of reproduction and protection of the natural resources, a system which will enable us to utilize the allotted appropriations with maximum effect. This requires first of all the development of a broad comprehensive program of intersectorial studies employing the services of the various types of specialists and scientists working in the field of conservation and rationalization of the exploitation of the natural resources.

The system of exploitation of the natural resources and protection of the environment must be structured with mandatory consideration of the republic's regional characteristics. It is first of all necessary in the future to set up an extremely flexible system for control of environmental protection, one operating in all the links (scientific, organizational, technological, economic, etc.) and coordinated in a single center. It would be employed in the republic's densely populated, oasis regions, where an unusually intensive--timewise and spacewise--process of exploitation of the natural wealth (land, water, biological, mineral and raw material, etc.) is accompanied by rapid rates of population growth, producing a number of the undesirable side effects associated with the intensification of urbanization. These processes take place in the context of a dry and severely continental climate, limited water resources, difficult soil development conditions, and a meager plant cover.

On the other hand, the geo-ecological systems of the republic's mountain, foothill and desert zones, which are subjected to an ever more active exploitation and have a comparatively small store of natural components and rather feeble links among them and are therefore in a very unstable situation--these systems are greatly in need of the organization of a specific system for control of the exploitation and protection of the natural resources.

The republic-wide system for protection and reproduction of the natural resources can only be effective if it is divided into regional subsystems based on the special characteristics of the various natural and economic regions--the Tashkent-Cherchik, the Angren-Almalyk, the Fergana, the Golodnostepskiy, Karshinskiy, Lower Amu-Dar'ya, and others. These are fundamental principles for present-day organization of a system of rational exploitation of natural resources and protection of the environment.

We must not expect full implementation of this kind of system in the near future. It can be brought to fruition by stages with a definite time sequence and with due regard for the complexity of the problems involved and an awareness of the magnitude of the input of physical assets.

The first order of priority should be given to the scientific investigations and practical work to prevent further environmental pollution and to limit its parameters to figures whereby the concentration of noxious substances will not exceed the permissible level. There is need in this connection to establish a system for recording, compiling and processing information on the status of the natural resources and on this basis to determine the need for capital investments for ecological purposes; also, to develop methods of evaluating the effectiveness of these investments.

The industrial enterprises with outmoded technology should be equipped with effective purification installations which are not inferior to any in the PDK. At the same time, we must gradually put into operation enterprises based on a low-water or nonwater technology and a closed cycle; production projects which are harmful to man must be moved away from the areas of housing construction. The existing production projects which require high inputs of water, energy and metal must search out technological and other potentialities for reducing the relative expenditure of water, raw material and fuel. The reproduction and protection of the environmental resources must thus be made into a special industry equal in standing to the other national economic sectors and with its own characteristics and tasks.

In turn, the broader realm of production activity--the conservation program as a whole, embracing the economic and departmental management system--must also undergo definite changes. In particular, it is necessary to orient production away from the principle of economic activity geared to the task of obtaining maximum economic effect for a particular enterprise and to reorient the production to the principle aimed at obtaining optimum ecological and economic effect. Urgently necessary in this connection is a gradual conversion of the enterprises from a technology based on the clearing of harmful discharges and drainage in the final production stage to a technology which excludes spontaneously generated environmental contamination (the closed cycle, circulating water, etc.). The wastes which are generated subsequent to such production must be either completely free of toxicity for nature and man or fully utilized in subsequent production.

In other words, the economic activity not only must not seriously impede the circulation of substances in the biosphere but must itself in some measure give it shape, i.e. an important task of the period lying ahead is an ever braoder development of a production complex which will use the raw materials with maximum effectiveness and to a maximum degree make full use of all the production wastes. It is necessary in this connection to devise regional schemes of exploitation of natural resources for each of the republic's territorial production complexes. These schemes must indicate the reasons behind the development of an ecologically correct and economically valid (from the standpoint of the republic's national economic tasks) complex of industries whose aggregate discharges into the environment will not exceed the permissible parameters.

The accomplishment of the tasks at hand requires the development and implementation of a complex of necessary organizational and technical measures and the allocation of the appropriate special-purpose capital investments.

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USSR

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ENVIRONMENTAL PROTECTION WORK AT PRODUCTION ASSOCIATION

Moscow KHIMICHESKIYE VOLOKNA in Russian No 2, 1979 pp 46-47

[Article by V. V. Markov, T. I. Motuzka, Ye. V. Belyayev and L. D. Lenskaya]

[Text] Environmental protection is a matter of great concern at the Kalinin Khimvolokno Production Association. During the last 12-15 years, more than 20 million rubles has been spent on the construction of purification and recycling units. All questions connected with environmental protection--the functioning of purification units, day-to-day control over production waste, the condition of water and the atmosphere, operational control in emergency situations and so forth--are given constant attention by the association management. Along with basic technical and economic indicators, all violations of sewage dumping and pollution regulations are also discussed each week; they are also taken into account when the results of socialist competition between the collectives of association shops and production units are summed up. Inspections of the condition of sewage and emissions have made it possible to establish pollution limits for shops and production units.

The institution of elements of autonomous financing in production units, the improvement of fiber production technology and the perfection of purification processes have considerably reduced standard expenditures of raw materials and energy, as well as production waste standards, and all of this has improved the condition of the air and water in Kalinin.

Several methods of sewage purification are being tested: the total reprocessing of surplus technological solutions, the improvement of technological processes and the reduction of emissions, reduced water consumption, and the improvement of sewage purification processes.

The enterprise has five functioning units for the crystallization of sodium sulphate and one unit for the regeneration of copper and ammonia, which puts chemicals worth around 6 million rubles back into production over the course of the year (including 17,000 tons of H_2SO_4, 17,000 tons of $ZnSO_4$ and 39,000 tons of Na_2SO_4) and thereby sharply reduces the dumping of valuable products.

Fresh water accounts for 50 percent of the total amount of water used in the association; the other 50 percent is obtained through the re-use of water (50,000 cubic meters a day), the incorporation of three recycling systems (57,000 cubic meters a day) and the start-up of six air coolers.

Each year the association takes steps to reduce expenditures of fresh water. For example, in 1977 water consumption was reduced by approximately 1.5 million cubic meters by closing the carbon disulfide plant, transferring to the use of natural gas in evaporators, replacing vacuum evaporators with a contact-evaporation scrubber in the first viscose fiber production unit, instituting the re-use of water in shops and taking other steps.

Since 1971, industrial waste has been purified with outside installations for the mechanochemical purification of up to 53,000 cubic meters of production waste a day. After the units began operating here, no more sulphuric acid was dumped into the Volga and the dumping of zinc was sharply reduced. The zinc content in the Volga has decreased to a fraction of its previous level in recent years, and it now meets the standards established for fishing areas.

The improvement of certain technological processes is reducing the quantity of pollutants dumped: the introduction of economical viscoses, the efficient loading of filter presses, continuous filtration in Banfir filters, GART pulverizers and so forth. The procedure for purifying industrial sewage in purification units is constantly being perfected, as a result of which the composition of purified sewage is constantly improving. During the last 3 years (1975-1977), the content of zinc in purified sewage decreased 2.5-fold, the content of suspended elements decreased 4-fold, the content of carbon disulfide decreased 1.8-fold and the hydrogen sulfide content decreased 1.3-fold.

Plans for the 1979-1981 period call for the completion of construction work on a system for the total recycling of nominally clean and trap sewage, which will almost completely stop the dumping of nominally clean sewage into the Volga and reduce water consumption by 40 percent. The current remodeling of outside purification units will ensure their more reliable operation in the future.

The following steps have been taken in the association in recent years to reduce emissions of harmful substances into the atmosphere. Three units for the recovery of carbon disulfide have been remodeled to increase the quantities recovered. A new catalyzer has been installed on the unit for the purification of hydrogen sulfide emissions, as a result of which the purification effect has risen to 92.8 percent and atmospheric emissions have been reduced. The carbon disulfide production unit has been enclosed, which has completely stopped all emissions of sulphur dioxide into the atmosphere. Construction work has been completed on a gas line running from the first viscose fiber production unit to the scrubber in the second production unit.

Atmospheric emissions have been reduced each year as a result of this work.

The association has four units for the recovery of carbon disulfide and one for the purification of hydrogen sulfide emissions. Each year around 4,500 tons of carbon disulfide and 1,500 tons of hydrogen sulfide are recovered.

The content of harmful substances in Kalinin's new development zone, however, still exceeds set standards. This is mainly due to the high level of emissions (more than 5 million cubic meters per hour) from the viscose production units with a low content of carbon disulfide and hydrogen sulfide and the absence of methods for recovering them from emissions of this kind. The Khimvolokno Scientific Production Association must conduct a great deal of research into the possibility of recovering carbon disulfide and hydrogen sulfide from emissions with low concentrations of these gases.

For the purpose of considerably reducing atmospheric emissions, the Kalinin Khimvolokno Association plans to complete the construction of a unit to remove all carbon disulfide from exhaust gases and to remodel the existing unit for removing hydrogen sulfide. Besides this, it will be necessary to transfer several production units to the manufacture of new fibers without the use of carbon disulfide.

Only the accomplishment of these tasks will ensure the minimum concentration of harmful substances in Kalinin's zone of new development.

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ITALY

TOXIC DIOXIN EMISSIONS FROM FLORENCE INCINERATORS INCREASE

Milan PANORAMA in Italian 19 Jun 79 pp 61, 64

[Article by Enrico Signori: "A Seveso on the Arno"]

[Text] There is no longer any doubt: the Florence incinerator is emitting a dangerous quantity of dioxin into the air. There is still talk of shutting it down, but San Donnino residents want to sue those responsible.

The statement handwritten on the title-page of the voluminous file now on Florence's Assistant Prosecutor Silvia Della Monica's table is succinct and terrifying: "Dioxin is present, and here are the proofs."

In this file local representatives of the district council contend that the chimneys of the incinerator used to burn the urban refuse of San Donnino, a large outlying ward of the Campi Bisenzio commune a few km from Florence, emit daily "indeterminate quantities of 22 different types of dioxin" mixed with 3 million cubic meters of toxic vapors and gas (including the most dangerous--that of Seveso).

What for 2 years was only suspected by the approximately 5,000 residents of San Donnino, that is, Europe's largest incinerator (three furnaces in continuous operation with a daily incinerating capacity of 400 tons of refuse coming from the entire Florence Province) and which discharges highly toxic substances on the residential area is now confirmed by a report which has fallen into PANORAMA's hands; the report is based on a series of analyses and was compiled in great secrecy in the chemical laboratories of the Tuscan provincial capital. "The quantities of the microcontaminants (including dioxins) found in the fumes emanating from the incinerator have been substantially higher in recent months: from 0.2 to 2 grams per day," according to what was written by the two chemists--Claudia Vannucchi and Moreno Berlincioni--authors of the report sent to the two assistants of the ministries of health and environment of the Florence commune and the Tuscan region.

Delay

"Two years have passed since the Florence council agreed to furnish us the results of the chemical analyses," Torello Ceccarelli, independent member of the PCI and chairman of the district council, stated reser ully. "And this is serious, inasmuch as the study confirms--with great delay--what we have been contending for some time with documents in hand."

In fact, when news appeared in the international press in the summer of 1977 indicating the discovery of dioxins and other toxic substances in the ashes of Dutch urban incinerators, FRATELLANZA POPOLARE, the health movement and the representatives of Democratic Medicine of Florence invited K. Olie and O. Hutzinger of the laboratory of ecological chemistry of the University of Amsterdam to make a survey in the San Donnino area. The result: "Your incinerator is perhaps the world's largest producer of dioxin," the Dutch experts wrote in a document sent to the district committee.

"Both the Florence administrators and the leaders of ASNU (the municipal urban sanitation firm which manages the facility) attached little value to this alarming opinion," according to Mauro Papucci of Democratic Medicine and leader of the group which is now asking more strongly for the closing of the incinerator. "There has always been a tendency to make a rationalized equation: "traces of dioxin equal an acceptable danger."

"This method used by local administrators and experts to deal with the question is shameful," blurts out Alberto Frigerio of the Mario Negri di Milano Institute for Pharmacological Research, one of the foremost experts on atmospheric pollution. "They seem unable to understand that an accumulation of even small quantities of dioxin causes deterioration and death over a period of time."

Meanwhile, Emilio Cremona, ASNU's chief engineer, who received a citation for atmospheric pollution, is making light of the accusations hurled by the district councilmen. But what irritated the San Donnino residents most was that Emilio Cremona had dozens of vases of roses placed all along the fence surrounding the plant. According to many, this move had two objectives: to make light of the people's protest and to alleviate tension among the 300 plant employees, who were likewise determined to demand the closing of the facility and report certain worrisome cases to the courts.

Certain ASNU workers speak of 15 employees who for months have been "physically incapacitated" and cite the extreme case of a colleague who, they assert, was reduced to a "purely vegetable" state.

Bronchial Diseases

Elio Gabbuggiani, communist mayor of Florence, and Davis Ottati, environmental adviser, fear that the presence of the incinerator has caused ecological damage in recent years and affected the health of many citizens (bronchial diseases resistant to antibiotics are on the rise among the children of this area). They have made plans for an epidemiological survey (in fact, there is talk of many cases of lung tumors, spontaneous abortions and dozens of children who have sores and rashes on their bodies) and have organized an international meeting to be held in the next few months in which ecologists, chemists, geneticists and researchers of world fame will discuss the effects of the poisons emitted by the urban incinerator on the human organism.

Both Gabbuggiani and Ottati want to initiate a plan aimed at territorial reclamation (2 million [lire] have been allocated as a start) and have given PANORAMA advance notice of their intention to close the incinerator once and for all. "A solution," states Roberto Michetti, member of the DC [Christian Democratic Party] of San Donnino, "which will certainly not compensate for the damage done by dioxin." In fact, the district committee, in collaboration with the entire community, wants to assume the role of plaintiff in a suit which will see in the defendant's box not only the current administrators but also the former members of the local government who had the polluting incinerator built 7 years ago.

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NORWAY

SAFEGUARDS ON NORWEGIAN SEA OIL DRILLING OUTLINED

Oslo NORSK OLJEREVY in Norwegian No 4, 1979 p 12

[Text] Parliametary Report No 57 will be the basis for the parliament's decision when the question of allowing test drilling north of 62 degrees N is brought up. The report covers 106 pages, of which about half deal with safety, above all in connection with the danger of oil spills in case of uncontrolled blowouts. Eleven pages are devoted to the relationship between oil activity and fish, and 25 pages to the description of plans for operations.

The environmental risk from drilling in the north is small, seen in relation to the significance of getting the resources mapped. Test drilling should be politically acceptable as a matter of course because we are already running a greater risk in our operations south of 62 degrees N, and shipping in the north already represents a greater danger of oil spills than test drilling will. For that matter, one can say that it was not necessary to have special consideration to be able to decide upon test drilling, but naturally we are all happy that the matter has been so thoroughly prepared. The value of the work which has been done here is not first of all to make it easy for the parliament in its decision-making process, but to insure that the test drilling will be carried out in the most responsible and effective manner. This way of dealing with the matter is, besides, a part of democratic leadership. It is worthwhile to bring in the parties concerned as early as the planning stages.

Up to now, the fear of large oil spills has been the main argument against test drilling. Based on NOU 1979:8 "The Risk of Uncontrolled Blowouts on the Norwegian Continental Shelf," it is confirmed in the report that most blowouts in test drilling only emit gas, and that oil blowouts are not very probable. Besides this, it is probable that it will stop by itself, particularly if the oil flow is strong. Nevertheless, the possibility of a long-lasting, powerful oil blowout cannot be excluded, but the probability is very low, (one blowout for 5 to 10 thousand wells).

But one cannot be satisfied in ascertaining that the probability is small. The consequences are also being discussed.

Dispersal Necessary

No longer do the experts look upon the damaging effects of an oil discharge at sea in such a pessimistic way. Oil on the open sea will probably do little damage to the fish, and the damage will be temporary. The chances are that only a small part of the oil will reach the coast. Steep, rocky coasts out toward the sea will suffer little damage. The outer skerries will, to a great extent, protect the sea lanes within. Sea birds are threatened the most, particularly in the north where many species are found in great concentration. Some species are already declining. Mechanical recovery of the oil will be ineffective because enough oil always slips out again to do damage to birds. Even a thin oil film can kill swimming birds. Only extensive use of dispersal material can be considered to prevent bird tragedies if there is an oil discharge in areas with many auks and ducks.

The report says quite reasonably that, since mechanical collection, which is the main alternative, is not always effective, we must also make preparations for dispersal materials. Statoil's plans include such means, but to a very modest extent. A ready supply is mentioned of 60 m^3 of concentrated dispersal material. Mechanical collection preparedness is set for 8,000 tons a day. Sixty m^3 of dispersal materials will, if they are to be used as a main alternative, possibly be used up in a few hours!

The need for handling 8,000 tons a day came from the evaluation of possible spill from production-ready wells in Statfjord. There is very little possibility that a test well will spill so much oil. In Canada 4-800 tons/day are planned in connection with test drilling in arctic areas. A large part of the oil will evaporate, in addition.

The nominal capacity of the equipment is 8,000 tons. The wave height and wind strength that the equipment is to be able to withstand refers to mechanical strain and operability. Nothing is said of the requirements for effectivness, neither in yearly average nor as a function of the weather. The uninitiated can be led to believe that the effectiveness is close to 100 percent. Experiments are planned which will give us a measure of effectiveness. One should not have too great expectations for oil collection on the open sea!

If it should be shown that the use of clearers and oil collectors, under normal weather conditions, is less effective than one hoped for, we must not, for this reason, again panic and postpone drilling in the north. The main argument that we can drill now must, in the opinion of the author, be that the probability of a large oil spill is low and that the consequences are not unreasonably great - seen in relation to the benefit we get from the oil. If one is not satisfied with oil safeguards based on clearers and similar equipment, we have dispersal to fall back on, and if one is still not satisfied, there are suggestions for equipment for collection of oil under water.

False Conclusion?

On page 61 it says: "The danger of explosion as a result of gas concentrations in the air set clear limits for how near the source boats can operate. One can hardly imagine that operation can be closer than 1,000 meters."

Here there seems to be a false conclusion. At the Bravo accident, one could not take any chances, and a wide security zone was necessary. An ignition would have been catastrophic. But north of 62 degrees N there is, for the present, only talk of exploratory drilling from a half-submerged platform. A possible discharge would in all probability be an underwater discharge. If the gas rises in a sufficient concentration that it will burn, it should be ignited (this will not cause much oil to burn up). Most probably the gas will come up so dispersed that the concentration in the discharge will already be just a few percent, and even a very weak wind will thin it to concentrations too low to burn. A safety zone of 1,000 meters seems to be greatly exaggerated.

Costs and Effectiveness

The total impression of the parliamentary report is that it is very sober and gives a realistic presentation of the dangers. It does not give quantified statements on the effectiveness of the equipment (this is probably a reasonable tactic).

It says on page 21: "In the evaluation of what risk level is acceptable, the authorities will, in the same way as for the effectiveness in the North Sea, carefully evaluate costs connected with the various safety and preparedness measures on the one hand, and to what extent the measures contribute to increase safety on the other." This is so very right, and it is pleasing that this is the intention. It is so very easy to approve of well-meaning, but scarcely cost-effective measures. Even if the report determines that cost effectiveness is to be used as a measurement, the report does not say that this means of observation is the basis; in that case the report should have told what safety and preparatory measures would cost the government and the oil companies, and what reduction in risk they give. But even if we have not come so far as to present quantitative cost-effectiveness analyses before safety decisions, we should nevertheless be happy that such a way of thinking is on the way in.

Every time new public documents on oil operations appear, we get some new Norwegian words to replace the English ones. A positive new creation in Government Report No 57 is the word "drepebronn" instead of "relief well," or "avlastningsbronn" [relief well], which are rather misleading words. But to call BOP (blowout preventer) a safety valve on the other hand is less well chosen. The words "safety valve" are understood by most people to be a valve that opens automatically when the pressure becomes too great, and this, of course, does not fit. "Boresikringsventil" [drill safety valve] might be a better word, and in a parallel way, DHSV (downhole safety valve) could be called a "produksjonssikringsventil" [production safety valve].

END

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